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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/682,008	07/09/2001	David S. Leslie	11-SW-4904	1042

23465 7590 01/21/2004

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EXAMINER	
ASSOUAD, PATRICK J	

ART UNIT	PAPER NUMBER
2857	

DATE MAILED: 01/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/682,008	LESLIE, DAVID S.	
	Examiner	Art Unit	
	Patrick J Assouad	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 22 December 2003.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-25 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-25 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 22 December 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. This action is responsive to the Amendment filed 12/22/2003. Claims 1,9,10,14, and 22 have been amended. Claims 1-25 are pending.

Response to Arguments

2. Applicant's arguments filed 12/22/2003 have been fully considered but they are not persuasive. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation to combine is that: "all three documents have common inventor or writer **Yalla**, and this common inventor clearly saw the benefits of such a combination, namely, communicating with the external world, and for performing self-checking, which is "one of the major advantages of using the digital relay technology" (pg. 198 of **Yalla**)," as indicated in the rejection below.

3. Applicant's other argument is based upon the new limitations of independent method claim 1 and independent system claim 10, which are reproduced below:

1. (currently amended) A method to monitor voltage and current signals using a multi-function generator protective relay system, said method comprising the steps of:

measuring at least one of a voltage, a current and a phase angle;

displaying at least one of a relay contact status and the power values on a display; and

maintaining the multi-function generator protective relay system in an energized state when a generator operationally coupled to the multi-function generator protective relay system is being energized.

16. (currently amended) A metering system comprising a plurality of electrical relays, a display, a microprocessor, a memory, and a plurality of printed circuit boards configured to accept voltage and current to be measured, and an auxiliary power supply configured to maintain said system in an energized state when a generator operationally coupled to said system is being energized, said microprocessor electrically connected to the memory, the printed circuit boards, and the display, said printed circuit boards electrically connected to a device, said system configured to continuously monitor voltage, current and frequency to protect the device.

4. In addition, Applicant discusses the power supply board (18) of **Yalla et al. '011** and the power supply (or supplies) of **Yalla et al.**:

Yalla et al. '011 describe a power supply board (18), which contains a switch mode power supply (62) (column 10, lines 23-25). This standard circuitry supplies the required power to run microprocessors, LEDs and LCD screen, and to drive output relay coils (column 10, lines 25-28). This type of power supply is more efficient, smaller and generates less heat than linear designs using power transformers (column 10, lines 28-30).

Yalla et al. '011 is described above. Yalla describes a switching mode power supply that provides a relay with various power supply voltages required for operation (page 197).

Yalla et al. describe a generator-transformer configuration with two multifunction generator protection systems (MPGSs), applied with redundant protective functions (pages 1285 and 1289). Each of the two MGPSs has its own separate dc-to-dc power supplies and tripping circuits (page 1289).

5. First, it should be noted that one of Applicant's own embodiments of the instant claimed invention indicates a "power supply configured to operate as a switched mode auxiliary power supply [emphasis added]" (claim 15). *Note, it's not entirely clear where this "switched mode" language is precisely disclosed in the instant Specification.*

6. Secondly, from at least col. 31, lines 15-50, of **Yalla et al. '011**, reproduced below, we clearly see that their multifunction generator protective relay system stays "energized" or powered or operating while or when a generator operationally coupled to it is being "energized" or powered up or "brought up to speed (frequency) and voltage" (lines 36-37):

The "Configure Relay" selection ("CONFIG" is highlighted in the First-Level Menu) is used to enable or disable individual relay functions, as well as select whether the MPRS 7 will be used for protection of the intertie, i.e., the interconnection with the utility, or to protect the generator itself. The Second-Level Menu includes "Enable" and "Disable" selections for the Voltage Relay, Frequency Relay, Current Relay and Power Relay elements. Setpoints for any disabled function will not appear in any other menu or screen. The Second-Level Menu selection "Trip Circuit Type" can be selected as "Intertie" or "Generator". When "Intertie" is selected, the MPRS 7 operates as described previously. When "Generator" is selected; the 27 Undervoltage, 27 Undervoltage Neutral, 81O Over Frequency, 81U Under Frequency, and 32 Directional Power relay elements will be automatically disabled when the status input contact to the MPRS 7 from breaker 52 indicates that the breaker is open. An open breaker would indicate that the generator 69 is off line (not connected to any loads) and perhaps stopped. In this manner, the generator 69 can be brought up to speed (frequency) and voltage prior to synchronizing and closing of breaker 52 without interference from the MPRS 7. If these relay elements were not disabled on the MPRS 7 when the generator 69 was being brought on line, the MPRS 7 would send a trip signal, since the frequency and voltage are outside setpoint limits. The 32 Directional Power relay element is disabled since inrush current at the time that breaker 52 is closed could cause the MPRS 7 to call for a trip operation due to an apparent change in power direction. When the input contact to the MPRS 7 from breaker 52 indicates that breaker 52 is closed; the 27, 27N, 81O, 81U and 32 relay elements are automatically enabled; and the MPRS 7 will operate using the programmed setpoints for these functions.

7. Thirdly, it should be noted that Figure 1 of **Yalla et al.**, "Application of Multifunction Generator Protection Systems", clearly shows "one or more power supplies", and pg. 1287, col. 2, of the same paper stipulates: "Failure of the external power supply will not cause the loss of all protection", and pg. 1289 of the same paper, "each of the MGPSs has its own separate dc-to-dc power supplies and tripping circuits. The built-in self-

monitoring and diagnostic functions are always on-line..." Similarly, see Figure 3 and pg. 197 of **Yalla et al.**, "A Digital Multifunction Protective Relay", which shows the power supply and board and from col.2, "a switching mode power supply provides the relay with various power supply voltages required for operation."

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-10, 14-18, and 21-25 are rejected under 35 U.S.C. 102(b) as being anticipated by **Yalla et al. ('011)** patented 6/29/93.

Note Figs. 1, 5 and 15 of **Yalla et al.('011)** are reproduced below.

10. **Yalla et al.('011)** disclose a multifunction protective relay system. From the Abstract:

> A protective relay system for generation apparatus connectable to a three-phase alternating current electrical utility system. The relay system includes a dual processing architecture wherein a digital signal processor executes all the signal-processing algorithms, and a separate microprocessor is used for input/output data processing. A dual-ported RAM is used to effect a fast communication link between the digital signal processor and the microprocessor to accomplish high-speed protective relaying functions to selectively trip and close a circuit breaker at a generator or cogenerator site, or that which connects it to an electric utility system.

11. The correspondence between the instant claimed invention and that of **Yalla et al.('011)** is as follows:

a) "measuring at least one of a voltage, a current and a phase angle" is seen in at least Fig. 5 with the numerous voltage and current input signals 29;

b) "displaying at least one of a relay contact status and the power values on a display" is seen in at least Fig. 1, see contact breaker status and various over- or under-voltage and current conditions, and also see the LCD element 41 of Fig. 5;

c) a "plurality of electrical relays" is the plurality of relays connected to the input and output boards in Fig. 5;

d) a "display" is LCD 41 of Fig. 5;

e) a "microprocessor" and "memory" are the combination processor 43 & DSP36 and RAM 38 of Fig. 5; and finally,

f) a "plurality of printed circuit boards..." is the plurality of boards seen in at least Fig. 5.

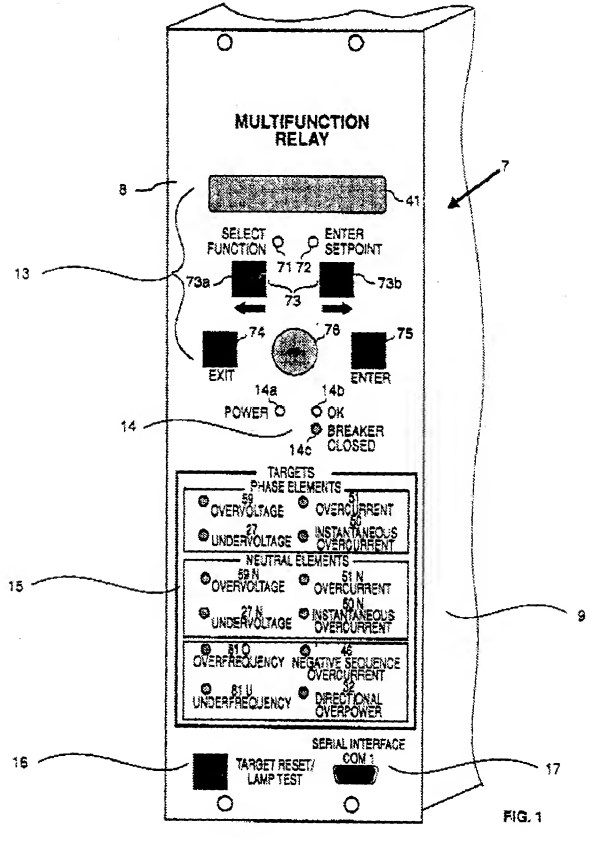
MULTIFUNCTION RELAY
8
41
7
SELECT FUNCTION
ENTER SETPOINT
13
71
72
73a
73b
73
74
76
75
EXIT
ENTER
14a
14b
POWER
OK
14
BREAKER CLOSED
14c
TARGETS
PHASE ELEMENTS
59 OVERVOLTAGE
51 OVERCURRENT
27 UNDERVOLTAGE
50 INSTANTANEOUS OVERCURRENT
NEUTRAL ELEMENTS
15
59 N OVERVOLTAGE
51 N OVERCURRENT
27 N UNDERVOLTAGE
50 N INSTANTANEOUS OVERCURRENT
9
81 O OVERFREQUENCY
46 NEGATIVE SEQUENCE OVERCURRENT
81 U UNDERFREQUENCY
67 DIRECTIONAL OVERPOWER
SERIAL INTERFACE
COM 1
16
TARGET RESET/ LAMP TEST
17

FIG. 1

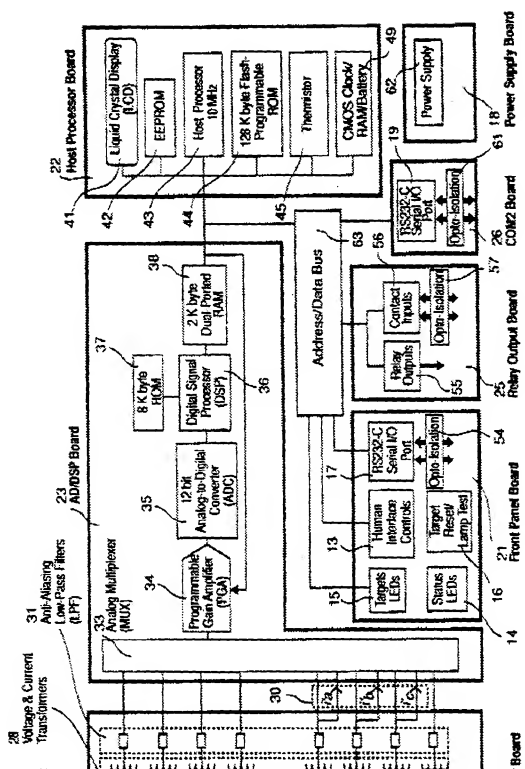
29
Voltage & Current Input Signals
28
Voltage & Current Transformers
31
Anti-Aliasing Low-Pass Filters (LPF)
33
Analog Multiplexer (MUX)
34
Programmable Gain Amplifier (PGA)
35
12 bit Analog-to-Digital Converter (ADC)
23
A/D/DSP Board
37
8 K byte ROM
36
Digital Signal Processor (DSP)
38
2 K byte Dual Ported RAM
22
Host Processor Board
41
Liquid Crystal Display (LCD)
42
EEPROM
43
Host Processor 10 MHz
44
128 K byte Flash Programmable ROM
45
Thermistor
49
CMOS Clock/ RAM/Battery
62
Power Supply
18
Power Supply Board
61
19
RS232-C Serial I/O Port
Opto-Isolation
26
COM2 Board
63
56
Address/Data Bus
57
Relay Outputs
Contact Inputs
Opto-Isolation
55
25
Relay Output Board
54
RS232-C Serial I/O Port
Opto-Isolation
17
13
Human Interface Controls
Target Reset/ Lamp Test
15
Targets LEDs
Status LEDs
16
21
Front Panel Board
14
30
24
Relay Input Board
Va
Vb
Vc
Vn
Ia
Ib
Ic
In

FIG. 5

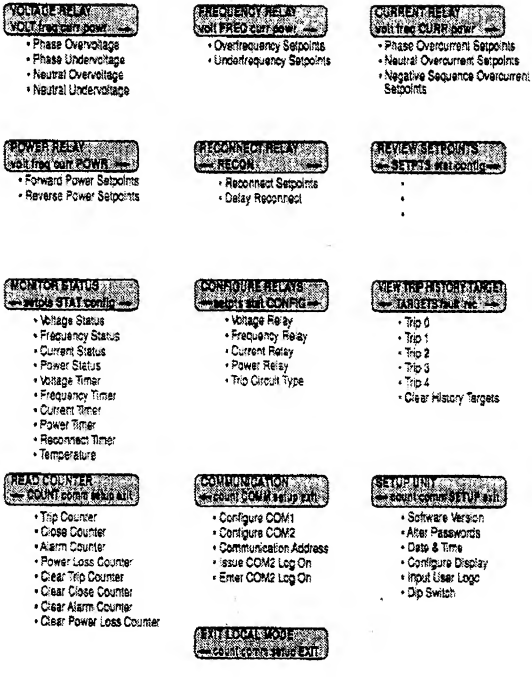
VOLTAGE RELAY
volt freq curr powr
• Phase Overvoltage
• Phase Undervoltage
• Neutral Overvoltage
• Neutral Undervoltage
FREQUENCY RELAY
volt FREQ curr powr
• Overfrequency Setpoints
• Underfrequency Setpoints
CURRENT RELAY
volt freq CURR powr
• Phase Overcurrent Setpoints
• Neutral Overcurrent Setpoints
• Negative Sequence Overcurrent Setpoints
POWER RELAY
volt freq curr POWR
• Forward Power Setpoints
• Reverse Power Setpoints
RECONNECT RELAY
RECON
• Reconnect Setpoints
• Delay Reconnect
REVIEW SETPOINTS
SETTNG stat config
•
•
•
MONITOR STATUS
stat STAT config
• Voltage Status
• Frequency Status
• Current Status
• Power Status
• Voltage Timer
• Frequency Timer
• Current Timer
• Power Timer
• Reconnect Timer
• Temperature
CONFIGURE RELAYS
setpt stat CONFG
• Voltage Relay
• Frequency Relay
• Current Relay
• Power Relay
• Trip Circuit Type
VIEW TRIP HISTORY/TARGET
TARGETS/HIST rec
• Trip 0
• Trip 1
• Trip 2
• Trip 3
• Trip 4
• Clear History Targets
READ COUNTER
count comm setup exit
• Trip Counter
• Close Counter
• Alarm Counter
• Power Loss Counter
• Clear Trip Counter
• Clear Close Counter
• Clear Alarm Counter
• Clear Power Loss Counter
COMMUNICATION
count COMM setup exit
• Configure COM1
• Configure COM2
• Communication Address
• Issue COM2 Log On
• Enter COM2 Log On
SETUP UNIT
count comm SETUP exit
• Software Version
• Alter Passwords
• Date & Time
• Configure Display
• Input User Logic
• Dip Switch
EXIT LOCAL MODE
count comm setup EXIT

FIG. 15

12. With respect to dependent claims 2, 16, 17, and 21, see at least the relay I/O boards of Fig. 5 and Fig. 15 of Yalla et al. which show numerous example relays and their related settings and related measurements.

With respect to dependent claim 3 , the MPRS 7 of Yalla et al. samples continuously at 960 Hz. See at least cols. 7-8.

With respect to dependent claim 4, see at least the diagnostic mode of Table 1 and Fig. 3 of Yalla et al.

With respect to dependent claims 5-6, see at least the various RMS values shown in Fig. 17.

With respect to dependent claims 7-8, and 18, see at least the Trip History of Fig. 15 or an example Trip time of occurence of Fig.16 of Yalla et al.

With respect to dependent claims 14-15 and 24, see at least the power supply and board 18,62 of Fig. 5 of Yalla et al.

With respect to dependent claims 22-23, see at least the connection for current-based fault detection of Fig. 8 of Yalla et al.

With respect to dependent claim 25, see at least the password of Fig. 15 of Yalla et al.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. Claims 11-13 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yalla et al. ('011)** as applied to claim 10 above, and further in view of **Yalla** ("A Digital Multifunction Protective Relay", IEEE, 1992) and **Yalla et al.** ("Application of Multifunction Generator Protection Systems", IEEE, 1998).

15. The differences between the instant claimed invention (dependent claims 11-13 and 19-20) and that of **Yalla et al. ('011)** lie in the "watchdog relay" function and the RS-485 capability.

16. Note that **Yalla et al.('011)** does disclose RS232-C I/O in at least Fig. 5.

17. **Yalla** discloses a watchdog timer reset in his digital multifunction protective relay. See at least pg. 198, item 1, under "self-checking functions". **Yalla et al.** disclose that "their MGPS may have bi-directional communication ports which can be RS-232, RS-485..." on pg. 1285.

18. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the RS-485 and watchdog teachings of **Yalla** and **Yalla et al.**, respectively, into the multifunction protective relay of **Yalla et al. ('011)** because all three documents have common inventor or writer **Yalla**, and this common inventor clearly saw the benefits of such a combination, namely, communicating with

the external world, and for performing self-checking, which is "one of the major advantages of using the digital relay technology" (pg. 198 of **Yalla**).

Conclusion

19. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick J Assouad whose telephone number is 703-305-3811. The examiner can normally be reached on Tuesday-Friday, 6:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc Hoff can be reached on 703-308-1677. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Patrick J Assouad
Primary Examiner
Art Unit 2857

pja